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Search
L/COOK 7/11/07

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(FILE 'HOME' ENTERED AT 11:32:55 ON 11 JUL 2007)

FILE 'BIOSIS, CAPLUS, EMBASE, MEDLINE, JAPIO' ENTERED AT 11:33:16 ON 11
JUL 2007

L1 33564 S (INOSITOL PHOSPHATE)
L2 84 S L1 AND (METAL ION)
L3 68 S L2 AND PD<2004
L4 37 DUPLICATE REMOVE L3 (31 DUPLICATES REMOVED)
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AN 1999058882 EMBASE

TI Action of phosphatidylinositol-specific phospholipase C γ 1 on soluble and micellar substrates: Separating effects on catalysis from modulation of the surface.

AU Zhou C.; Horstman D.; Carpenter G.; Roberts M.F.

CS M.F. Roberts, Merkert Chemistry Center, Boston College, Chestnut Hill, MA 02467, United States. mary.roberts@bc.edu

SO Journal of Biological Chemistry, (29 Jan 1999) Vol. 274, No. 5, pp. 2786-2793. .

Refs: 32

ISSN: 0021-9258 CODEN: JBCHA3

CY United States

DT Journal; Article

FS 029 Clinical Biochemistry

LA English

SL English

ED Entered STN: 19 Mar 1999

Last Updated on STN: 19 Mar 1999

AB The kinetics of PI-PLC γ 1 toward a water-soluble substrate (inositol 1,2-cyclic phosphate, cIP) and phosphatidylinositol (PI) in detergent mixed micelles were monitored by sip NMR spectroscopy. That cIP is also a substrate ($K(m) = .apprx. 15 \text{ mM}$) implies a two-step mechanism (intramolecular phosphotransferase reaction to form cIP followed by cyclic phosphodiesterase activity to form inositol-1-phosphate (I-1-P)). PI is cleaved by PI-PLC γ 1 to form cIP and I-1-P with the enzyme specific activity and ratio of products (cIP/I-1-P) regulated by assay temperature, pH, Ca $^{2+}$, and other amphiphilic additives. Cleavage of both cIP and PI by the enzyme is optimal at pH 5. The effect of Ca $^{2+}$ on PI-PLC γ 1 activity is unique compared with other isozymes enzymes: Ca $^{2+}$ is necessary for the activity and low Ca $^{2+}$ activates the enzyme; however, high Ca $^{2+}$ inhibits PI-PLC γ 1 hydrolysis of phosphoinositides (but not cIP) with the extent of inhibition dependent on pH, substrate identity (cIP or PI), substrate presentation (e.g. detergent matrix), and substrate surface concentration. This inhibition of PI-PLC γ 1 by high Ca $^{2+}$ is proposed to derive from the divalent metal ion-inducing clustering of the PI and reducing its accessibility to the enzyme. Amphiphilic additives such as phosphatidic acid, fatty acid, and sodium dodecylsulfate enhance PI cleavage in micelles at pH 7.5 but not at pH 5.0; they have no effect on cIP hydrolysis at either pH value. These different kinetic patterns are used to propose a model for regulation of the enzyme. A key hypothesis is that there is a pH-dependent conformational change in the enzyme that controls accessibility of the active site to both water-soluble cIP and interfacially organized PI. The low activity enzyme at pH 7.5 can be activated by PA (or phosphorylation by tyrosine kinase). However, this activation requires lipophilic substrate (PI) present because cIP hydrolysis is not enhanced in the presence of PA.

CT Medical Descriptors:

*catalysis

*enzyme kinetics

micelle

phosphorus nuclear magnetic resonance

enzyme activity

temperature

pH

enzyme substrate

conformational transition

enzyme active site

enzyme activation

hydrolysis

nonhuman

rat

controlled study
article
priority journal
Drug Descriptors:
*phosphatidylinositol
*phospholipase c: EC, endogenous compound
inositol 1,2 cyclic phosphate
 inositol phosphate
phosphodiesterase
calcium ion
phosphatidic acid
fatty acid
dodecyl sulfate

RN (phospholipase c) 9001-86-9; (inositol 1,2 cyclic phosphate) 43119-57-9; (
inositol phosphate) 15421-51-9; (calcium ion)
14127-61-8; (dodecyl sulfate) 151-41-7

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CT Medical Descriptors:
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 *enzyme kinetics
 micelle
 phosphorus nuclear magnetic resonance
 enzyme activity
 temperature
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 enzyme substrate
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 enzyme active site
 enzyme activation
 hydrolysis
 nonhuman
 rat

controlled study
article
priority journal
Drug Descriptors:
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*phospholipase c: EC, endogenous compound
inositol 1,2 cyclic phosphate
inositol phosphate
phosphodiesterase
calcium ion
phosphatidic acid
fatty acid
dodecyl sulfate

RN (phospholipase c) 9001-86-9; (inositol 1,2 cyclic phosphate) 43119-57-9; (
inositol phosphate) 15421-51-9; (calcium ion)
14127-61-8; (dodecyl sulfate) 151-41-7

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L8 3 S L4 AND ASSAY?
L9 2 S L1 AND ZR4?
L10 93 S L1 AND F3?
L11 17 S L1 AND FE3?
L12 11 DUPLICATE REMOVE L11 (6 DUPLICATES REMOVED)
L13 10 S L12 AND PD<2004

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L13	10 S L12 AND PD<2004

ANSWER 5 OF 10 CAPLUS COPYRIGHT 2007 ACS on STN

AN 1989:493130 CAPLUS

DN 111:93130

ED Entered STN: 16 Sep 1989

TI HPLC separation and detection of inositol phosphate isomers

AU Henderson, Susan K.; Desplaines, Kimberly; Henderson, David E.

CS Dep. Chem., Quinnipiac Coll., Hamden, CT, 06518, USA

SO BioChromatography (1989), 4(2), 89-93

CODEN: BCHREF; ISSN: 0888-4404

DT Journal

LA English

CC 9-3 (Biochemical Methods)

AB The use of metal ions, Fe^{3+} , Zn^{2+} , tris(2,2,6,6-tetramethyl-3,5-heptanedionato)europium(III) [$\text{Eu}(\text{DPM})_3$], and ferroin, as mobile phase additives to enhance the UV detection of inositol phosphate isomers was investigated. Spectrophotometric studies of myo-inositol phosphate with FeCl_3 were performed, and it was concluded that an Fe^{3+} /myo-inositol-phosphate complex formed with a UV absorption maximum at 280 nm. For the addnl. two metal ions, Zn^{2+} and Fe^{2+} , and for ferroin, it was concluded that their presence in the mobile phase did not result in changes in absorbance that would enhance the UV detection of the inositol phosphate compds. The addition of $\text{Eu}(\text{DPM})_3$ allowed detection but did not yield the sensitivity of Fe^{3+} . Myo-inositol-2-monophosphate (IMP) was separated on a reverse-phase HPLC column using a formate buffer containing FeCl_3 and an iron pairing reagent, tetrabutylammoniumhydroxide. Addition of Fe^{3+} to the mobile phase allowed quant. determination of myo-inositol-2-monophosphate over a range extending from 20-500 ng by absorption at 280 nm. Estimated detection limits were .apprx.15-20 ng. Separation of phytic acid (PY) and other inositol phosphate isomers have not yet been reliably achieved under these conditions.

ST inositol phosphate isomer sepn detection; HPLC
inositol phosphate UV spectrometry; liq chromatog
inositol phosphate

IT Spectrochemical analysis
(UV, for inositol phosphate isomers, after HPLC)

IT Chromatography, column and liquid
(high-performance, of inositol phosphate isomers)

IT 7439-89-6, Iron, uses and miscellaneous

RL: USES (Uses)

(in inositol phosphate spectrophotometric determination)

IT 131-99-7, IMP 132-06-9, ITP 7336-80-3 68247-19-8D, Inositol phosphate, isomers

RL: ANST (Analytical study)

(separation and detection of, by HPLC)